D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1

UNIT-I SCIENTIFIC RESEARCH METHODOLOGY

Introduction

SECTION-A (6 marks)

1. Explain in detail about the aim, principle and objectives of research.
2. Discuss in detail about the sicence citation index for scientific papers, journals and patents.
3. Write short note on
   (i) http
   (ii) html
   (iii) www
4. Describe in detail about the TCP/ IP band width and dial up service.
5. Give a brief account on email and free e mail service providers.

SECTION-B (15 marks)

6. Describe in detail about the survey of scientific literature using primary and secondary sources (15).
7. (a) Enumerate in detail about the usage of internet in literature searches for chemistry and internet service providers in India (9).
   (b)Explain the following terms (6)
   (i) Chemdraw
   (ii)STN international
8. (a) Discuss in detail about the chemical Abstracts Services, by the publishers – ACS, RSC, Elsevier and VCH (8)
   (b) Explain in detail about the source for list of Chemistry Journals using Chemweb.Co (7)

UNIT-II Conduct of Research work

SECTION-A (6 marks)

1. What are the safety and precautionary measures to be taken while handling explosive and radioactive materials?
2. Explain the Principle and application of Soxhlet extraction.
3. Explain in detail about instrumentation and applications of Vacuum Sublimation and crystallization
4. List out the sensitive and toxic chemicals and handling process.
5. What are all the physical properties used in the analysis of separtation techniques.
6. Write a note on extraction methods.
7. Give an account on isolation techniques.
8. What is all the classification of distillation methods for purifications?
9. What are the safety and precautionary measures to be taken while handling hazardous materials – acid / water sensitive, corrosive materials?

SECTION-B (15 Marks)

1. Explain in detail about the extraction methods and soxhlet extraction.
2. Discuss in detail about the methods for crystallization , vacuum sublimation and distillation under reduced pressure.
3. Write a short note on handling hazardous materials / chemicals of explosive and radioactive materials and water sensitive chemicals and corroded matters.

UNIT-III Evaluation of Analytical Data

SECTION-A (6 Marks)

1. What is mean, median and mode?
2. Explain about precision and accuracy.

3. Give an account of Normal distribution curve.
4. Explain about reliability.
5. Explain about determinate errors.
6. What are inderminate errors? Account for it.
7. Explain about Poisson curve.

SECTION-B (15 Marks)

8. Give a brief account on thesis and assignment writing
9. How will you edit and evaluate the final product of thesis
10. Discuss in detail about of foot notes and quotations
11. Explain why the analytical data are analyzed under error analysis.

UNIT – IV Statistical treatment of Analytical Data

SECTION-A (6 Marks)

1. Write a note on corrosion diagram.
2. Briefly explain the least square analysis.
3. Give an account on regression and correlation methods.
4. Explain bar diagram.
5. Explain the data plotting.
6. What is meant Q-test? Mention its significance.
7. Find out the students 't' for the eight variety values.(-4,- 2,-2,0,2,2,3,3)
8. Find out the students by F test for the values of 0.32,0.34,0.35,0.36,0.38,0.39,0.33.
9. Explain the correlation coefficient.
10. Explain the types of corrosion.
11. Calculate the correlation for the following data

Subject	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**

Normal	56	56	65	65	50	25	87	44	35
Hypervent	87	91	85	91	75	28	122	66	58

12. Calculate the correlation and correlation coefficient from the following datas.

X	8	8	6	7	5	3	4
Y	81	80	75	65	60	91	80

13. Write a note on significant figures and computation rules.

SECTION-B (15 marks)

1. Explain in detail about the Statistical treatment of finite samples with sutiable examples.
2. Explain in detail about the correlation, correlation coefficient and types of correlations.
3. a.Conduct a two tailed F Test on the following samples:

   Sample 1: Variance = 109.63, sample size = 41.

   Sample 2: Variance = 65.99, sample size = 21.

   b. calculate the t test from the following data.

Subject #	Score 1	Score 2
1	3	20
2	3	13
3	3	13
4	12	20
5	15	29
6	16	32
7	17	23
8	19	20
9	23	25
10	24	15
11	32	30

4. a.Explain the Q test , t test and f test with suitable examples.

   b. briefly explain the significant figures and computation rules.

5. Calculate the correlation, correlation coefficient and regression values for following datas.

X	14.2	16.4	11.9	15.2	18.5	22.1	19.4	25.4	23.4	18.1	22.6	17.2
Y	215	325	185	332	406	522	412	614	544	421	445	408

6. Calculate the least square analysis method for following datas

X	1	2	3	4	5	6
Y	5	10	15	20	25	35

UNIT - V Thesis and Assignment Writing

SECTION-A (6 Marks)

1. What is a thesis? Give a comparison account on assignment and thesis
2. What are the steps to be followed for poof reading
3. Define abbreviations. Give examples
4. How will you prepare tables for interpretations of data
5. What is the role of quotations while writing thesis
6. Define footnotes. Give suitable examples
7. How the references play a major role in thesis writing
8. How can you interpret your results with figure

SECTION-B (15 Marks)

9. Give a brief account on thesis and assignment writing
10. How will you edit and evaluate the final product of thesis
11. Discuss in detail about of foot notes and quotations